

Summary Report of Splittail Facility Efficiency Experiments

Investigators

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Summary

Reclamation's Tracy Fish Collection Facility (TFCF), located in the southern Sacramento-San Joaquin Delta (Delta), was designed to divert juvenile Chinook salmon (*Oncorhynchus tshawytscha*) and striped bass (*Morone saxatilis*) from Delta Mendota Canal (DMC) flows, thereby preventing entrainment loss to the downstream Jones Pumping Plant (JPP, Central Valley Project; Bates *et al.* 1960). Fish entrainment is defined as "the incidental trapping of any life stage of fish within waterways or structures that carry water being diverted for anthropogenic use" (NMFS 2010). The TFCF uses a louver-bypass system to intercept and guide fish from DMC entrainment into collection tanks, where they are held until they are truck-transported back to the Delta and away from the immediate influence of the JPP. Fish and exported flows enter the facility underneath a surface debris collector (trash boom), through a trashrack with 5.1-cm-wide (2-in-wide) bar spacing and the 25.6-m-wide (84-ft-wide) primary channel to one of four bypass entrances along the louver wall. Once inside a bypass entrance, fish move into underground concrete pipes to the secondary channel where they encounter a double-louver wall. Fish guided successfully by these louvers are diverted to one of four fish collection tanks. Although the louver/bypass components were designed to screen and salvage fish from exported flows, there are many potential areas where fish loss can occur, and the facility is reportedly not 100% effective (Karp *et al.* 1995; TFCF unpublished data). The objective of this plan is to summarize past studies evaluating facility efficiency of splittail.

Problem Statement

Splittail was believed to be declining in the Central Valley of California. Consequently, we conducted facility efficiency experiments.

Goals and Hypotheses

Goal:

1. Determine facility efficiency for juvenile splittail.

Materials and Methods

Release recapture experiments were used to measure facility efficiencies. Juvenile splittail were released into the primary channel, and their recovery in the holding tank was determined under a range of hydraulic conditions.

Coordination and Collaboration

These studies will be coordinated with the California Department of Fish and Game's Delta diversion facilities reporting program, and the Tracy Fish Collection Facility staff. All work will be reviewed by the Tracy Technical Advisory Team through progress updates on request and reviews of study plans and all reports.

Endangered Species Concerns

Incidental "take" of ESA listed salmon, steelhead, and delta smelt is possible and such fish will be returned to Delta waters as quickly as possible. The total number of each ESA species incidentally caught or collected during the experiment will be recorded and sent to the reporting agencies. The incidental take from this research is covered under the TFCF Section 10 permit.

Dissemination of Results (Deliverables and Outcomes)

Provide draft and final summary report of experimental findings by September 30, 2012.

Literature Cited

- Bates, D.W., O. Logan, and E.A. Pesonen. 1960. *Efficiency evaluation, Tracy Fish Collection Facility, Central Valley Project, California*. U.S. Fish and Wildlife Service. Seattle, Washington.
- Karp, C.A., L. Hess, and C. Liston. 1995. *Re-evaluation of louver efficiencies for juvenile Chinook salmon and striped bass at the Tracy Fish Collection Facility, Tracy, California, 1993*. Volume 3, Tracy Fish Collection Facility Studies, U.S. Bureau of Reclamation, Mid-Pacific Region and Denver Technical Service Center.
- NMFS. 2010. Endangered and threatened wildlife and plants: final rulemaking to establish take prohibitions for the threatened Southern Distinct Population Segment of North American green Sturgeon. Federal Register 75(105):30714–30730.